Listing of Claims:

1. (original) A spectroscopic analysis method for detecting the presence or measuring the concentration of analytes in a sample, said method comprising the steps of:

providing a collimated incident optical beam;

directing said collimated incident optical beam through an optical immersion probe comprising a probe housing tube having a first end at an opening and a second end, a spherical lens fixed within said opening of said probe housing tube, and a seal positioned between said spherical lens and said probe housing tube, wherein said spherical lens focuses said incident optical beam;

contacting said optical immersion probe with said sample wherein said spherical lens is in physical contact and optical contact with said sample, and wherein said spherical lens provides an optical and sample interface,

illuminating said sample with said incident optical beam;

collecting scattered light from said analytes with said spherical lens, thereby generating a beam of scattered light; and

analyzing and detecting said beam of scattered light with a photodetector, thereby detecting the presence of analytes in the sample, measuring the concentration of analytes in the sample or both.

2. (original) The spectroscopic analysis method of claim 1 wherein said analyzing step comprises passing said scattered light through a Raman spectrometer.

3. (original) The spectroscopic analysis method of claim 1 wherein said spectroscopic analysis method provides a Raman spectroscopy measurement.

4. (original) The spectroscopic analysis method of claim 1 wherein said spectroscopic analysis method provides a Fourier Transform infrared spectroscopy measurement.

5. (original) The spectroscopic analysis method of claim 1 wherein said spectroscopic analysis method provides an infrared spectroscopy measurement.

6. (original) The spectroscopic analysis method of claim 1 wherein said spectroscopic analysis method provides a visible light spectroscopy measurement.

7. (original) The spectroscopic analysis method of claim 1 wherein said spectroscopic analysis method provides an ultra-violet light spectroscopy measurement.

8. (original) The spectroscopic analysis method of claim 1 wherein said incident optical beam comprises light having wavelengths in the visible region of the electromagnetic spectrum.

9. (original) The spectroscopic analysis method of claim 1 wherein said incident optical beam comprises light having wavelengths in the ultraviolet region of the electromagnetic spectrum.

10. (original) The spectroscopic analysis method of claim 1 wherein said incident optical beam comprises light having wavelengths in the infrared region of the electromagnetic spectrum.

11. (original) The spectroscopic analysis method of claim 10 wherein said incident optical beam comprises light having wavelengths in the mid-infrared region of the electromagnetic spectrum.

12. (original) The spectroscopic analysis method of claim 10 wherein said incident optical beam comprises light having wavelengths in the near-infrared region of the electromagnetic spectrum.

13. (original) The spectroscopic analysis method of claim 1 wherein said spherical lens is a ball lens.

14. (original) The spectroscopic analysis method of claim 1 wherein said spherical lens has a shape approximating the form of at least a portion of a geometric sphere.

15. (original) The spectroscopic analysis method of claim 1 wherein said spherical lens provides a constant focal length.

16. (original) The spectroscopic analysis method of claim 1 wherein the distance between the apex of said spherical lens and the focal point of said spherical lens is between about 50 microns to about 200 microns.

17. (original) The spectroscopic analysis method of claim 1 wherein said spherical lens provides a constant focal volume.

18. (original) The spectroscopic analysis method of claim 1 wherein said seal is selected from the group consisting of:

a weld;

a braise;

an adhesive layer; and

a gasket.

19. (original) The spectroscopic analysis method of claim 1 wherein said seal is an o-ring seal.

20. (original) The spectroscopic analysis method of claim 1 wherein said seal is a substantially leak proof seal.

21. (original) The spectroscopic analysis method of claim 20 wherein said substantially leak proof seal is leak proof for pressures up to about 1000 psi Helium.

22. (original) The spectroscopic analysis method of claim 1 wherein said sample is selected from the group consisting of:

a solid;

a liquid;

a powder;

a suspension;

particles;

a slurry; and

a vapor.

23. (original) A spectroscopic analysis method for detecting the presence or measuring the concentration of analytes in a sample, said method comprising the steps of:

providing a collimated incident optical beam;

directing said collimated incident optical beam through an optical immersion probe comprising a probe housing tube having a first end at an opening and a second end, a spherical lens fixed within said opening of said probe housing tube, and a seal positioned between said spherical lens and said probe housing tube, wherein said spherical lens focuses said incident optical beam;

contacting said optical immersion probe with said sample wherein said spherical lens is in physical contact and optical contact with said sample, and wherein said spherical lens provides an optical and sample interface,

illuminating said sample with said incident optical beam;

collecting fluorescent light from said analytes in said sample with said spherical lens, thereby generating a beam of fluorescent light; and

analyzing and detecting said beam of fluorescent light with a photodetector, thereby detecting the presence of analytes in the sample, measuring the concentration of analytes in the sample or both.

24. (original) The spectroscopic analysis method of claim 23 wherein said incident optical beam comprises light having wavelengths in the visible region of the electromagnetic spectrum.

25. (original) The spectroscopic analysis method of claim 23 wherein said incident optical beam comprises light having wavelengths in the ultraviolet region of the electromagnetic spectrum.

Claims 26 - 39 (canceled)